Trend Study 13B-7-00

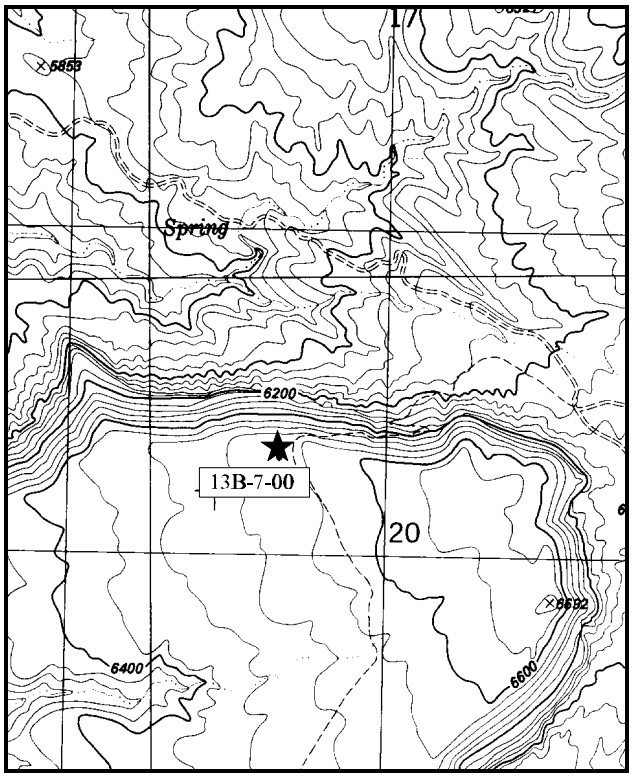
Study site name: Steamboat Mesa North . Range type: Chained, Seeded P-J .

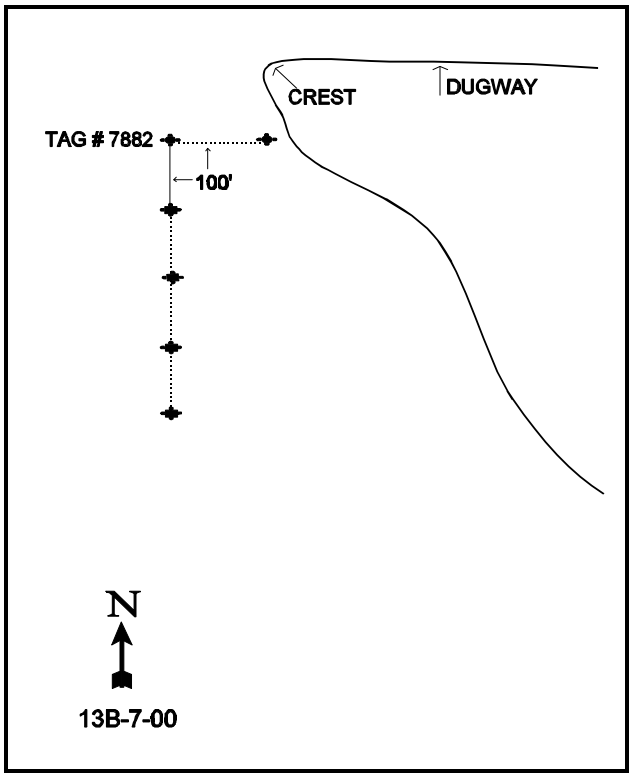
Compass bearing: frequency baseline 165°M.

Footmark first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the Buckhorn Draw transect (13B-5). Continue southeast for 1.35 miles to the "Granary" intersection. Turn right and go 0.2 miles to a fork. Stay left. Go 1.55 miles and turn left. Go down this road 0.7 miles to Granite Creek. Cross the creek and proceed 4.8 miles to a fork. Stay left, then right at another fork which connects back to the main road, traveling 0.4 miles to a stock pond. Continue 0.15 miles to a fork with many branches (the right goes up on Steamboat Mesa). It is 0.9 miles from the fork to the top of Steamboat Mesa and a witness post on the right side of the road. The witness post (a green fence post) is six feet off the road. The 0-foot baseline stake is 100 feet west of the witness post. All the transect posts are rebar.





Map Name: Steamboat Mesa Diagrammatic Sketch

Township 23S , Range 26E , Section 20 UTM 4295207.117 N, 666727.059 E

DISCUSSION

Trend Study No. 13B-7 (34-7)

The Steamboat Mesa North study lies on a large flat mesa located in the southeast corner of the Dolores Triangle, just north of the Dolores River and west of the Colorado border. The mesa is surrounded by steep rock cliffs, with the only access being a rough 4-wheel drive road on the north end. This transect was set up in a large chaining just beyond the north edge of the mesa. The study is located on a slight slope (3-5%) with a southwest aspect and an elevation of 6,600 feet. Managed by the BLM, this portion of the Steamboat Mesa allotment was two-way chained and seeded in 1968. Species seeded were crested wheatgrass, four-wing saltbush, big sagebrush, alfalfa, and bitterbrush. The allotment is grazed by cattle from December through mid-April for 884 AUM's. Key forage species are crested wheatgrass, and scattered Wyoming big sagebrush, white stemmed rabbitbrush, green ephedra, and bitterbrush. Data from a pellet group transect run parallel to the study site baseline in 2000 estimates 42 deer days use/acre (104 ddu/ha), and 17 cow days use/acre (42 cdu/ha).

The soil is shallow and well-drained. The soil is classified as a sandy clay loam derived from sandstone. It has a mildly alkaline pH of 7.7. Soil depth is variable, from very shallow to moderately deep, with rock scattered throughout the soil profile, effective rooting depth on average is almost 12 inches. Low phosphorus at 8.7 ppm may be limiting as 10ppm has been shown to be the minimum necessary for normal plant growth and development. Litter accounts for almost 47% of the ground cover, much of which was left from the chaining. Vegetative cover is currently about 33% with about 5% to 9% combined rock and pavement cover. Percent bare ground has increased since 1986 from 23% to 39%. The ratio of bare soil to protective cover has remained almost the same. There are a few shallow bare spots, but overall, no signs of active erosion on the site.

The overstory canopy cover from pinyon and juniper trees is 9%. Point-center quarter from 2000 estimates tree densities at 177 pinyon/acre and 142 juniper/acre. True mountain mahogany, Antelope bitterbrush, rubber rabbitbrush, Wyoming big sagebrush, black sagebrush, Utah serviceberry, and fourwing saltbush, although all found at low densities, display good vigor and only light hedging. Green ephedra and fourwing saltbush show moderate hedging with some appearing to be in poor condition. This is generally normal for these two species where they are found in low densities.

Crested wheatgrass is the key forage species for cattle. It accounts for nearly all of the grass cover and forms large, distinct patches over the site. Cheatgrass was the next dominant grass in 1995 yet it only made up 13% of the grass cover. It has since declined significantly in frequency and currently accounts for <1% of the grass cover. Other important forage grasses are Indian ricegrass and mutton bluegrass. Needle and thread grass was sampled in 1986 as an important forage grass, but was not found in 1995. However, it was sampled again in 2000.

A variety of native perennial forbs are found on the site, although none are particularly important in terms of forage value on winter range. Most common are increasers such as rock goldenrod, Hoods phlox, and hairy gold aster. Alfalfa is scattered throughout the site in very low densities.

1986 APPARENT TREND ASSESSMENT

Juniper and pinyon are becoming more dominant on this site and will begin to impact the more desirable browse species. However, there is a potential for the other shrubs to increase. The BLM resource management plan addresses the need to "maintain" this chaining. Big game habitat could be improved if maintenance involved tree removal to release the more desirable browse species. The variety of grasses and forbs currently provide good spring forage. The long-term vegetative trend would be considered down without intervention. The soil trend appears stable at this time.

1995 TREND ASSESSMENT

Bare ground has increased since 1986 although there are no signs of active erosion. The increase in bare ground is due to the lack of litter produced with drier conditions in recent years. Therefore, the soil trend is stable. Currently, grasses provide good spring forage. There is a wide variety of annual species found on the site as well. Most of the cheatgrass is found in large patches with crested wheatgrass scattered throughout. Although nested frequency for perennial forb species has increased, most are increasers and of little forage value. The herbaceous understory trend is slightly upward, although, a different composition may be desirable. Pinyon and juniper combine for 305 trees/acre. Browse species are scattered throughout in low densities with most showing little utilization. This leads to a stable browse trend.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly upward (4)

2000 TREND ASSESSMENT

Bare ground has increased slightly again since 1995, yet the ratio of bare soil to protective cover is almost unchanged and there are no signs of active erosion. The increase in bare ground is due to the exceptionally dry year we have just experienced. Therefore, the soil trend is stable. Currently, grasses provide good spring forage. There is a wide variety of annual species found on the site, although they are in reduced numbers with the drought. Nested frequency for perennial forb species has decreased, while that for the perennial grasses increased. Since forbs only make up 15% of the herbaceous cover, the herbaceous understory trend is considered slightly upward for the perennial grasses, with the composition shifting to more perennial species. Pinyon and juniper density appears stable. Browse species are scattered throughout in low densities with most showing little utilization. This leads to a stable browse trend.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly upward (4)

HERBACEOUS TRENDS --
Herd unit 13B, Study no: 7

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'95	'00	'86	'95	'00	'95	'00
G	Agropyron cristatum	a155	b228	c277	63	78	92	9.01	16.29
G	Bromus tectorum (a)	-	b163	a3	-	58	2	1.35	.03
G	Oryzopsis hymenoides	c52	b15	a-	22	9	-	.14	.00
G	Poa fendleriana	b4	b4	a-	3	3	-	.04	-
G	Poa secunda	a-	ab3	b9	-	2	3	.03	.04
G	Sitanion hystrix	b28	a-	a2	13	-	1	-	.03
G	Sporobolus cryptandrus	-	-	1	-	-	1	-	.03
G	Stipa comata	b8	a-	ab5	5	-	2	-	.03
G	Vulpia octoflora (a)	-	5	-	-	3	-	.01	-
Total for Annual Grasses		0	168	3	0	61	2	1.37	0.03
Total for Perennial Grasses		247	250	294	106	92	99	9.23	16.43
Total for Grasses		247	418	297	106	153	101	10.60	16.47
F	Agoseris glauca	-	-	-	-	-	-	.01	-
F	Allium spp.	-	3	-	-	1	-	.00	-
F	Astragalus convallarius	7	1	1	3	1	1	.01	.03
F	Astragalus spp.	-	6	1	-	3	1	.01	.00
F	Carduus nutans (a)	-	b8	a-	-	3	-	.01	-
F	Cryptantha spp.	-	4	-	-	2	-	.01	-
F	Cymopterus spp.	a-	b16	a-	-	8	-	.04	-
F	Descurainia spp. (a)	-	4	-	-	2	-	.01	-
F	Draba nemorosa (a)	-	b96	a-	-	36	-	.21	-
F	Erodium cicutarium (a)	-	8	9	-	3	3	.16	.41
F	Erigeron pumilus	a2	b19	ab13	1	8	6	.04	.05
F	Gilia hutchinifolia (a)	-	b28	a-	-	13	-	.07	-
F	Haplopappus acaulis	3	7	3	2	2	1	.01	.00
F	Heterotheca villosa	a-	b16	b16	-	7	6	.21	.29
F	Lappula occidentalis (a)	-	b43	a-	-	21	-	.15	-
F	Lactuca serriola	-	6	-	-	2	-	.15	-
F	Lepidium densiflorum (a)	-	b24	a-	-	9	-	.19	-
F	Machaeranthera spp	a-	b21	a-	-	9	-	.04	-
F	Medicago sativa	-	3	2	-	1	1	.00	.03
F	Penstemon spp.	-	1	3	-	1	1	.00	.15
F	Petradoria pumila	37	41	32	16	17	13	2.21	1.35
F	Phlox hoodii	28	32	13	14	14	7	.49	.11
F	Phlox longifolia	-	2	-	-	1	-	.00	-
F	Plantago patagonica (a)	-	3	-	-	1	-	.01	-

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'95	'00	'86	'95	'00	'95	'00
F	Polygonum douglasii (a)	-	3	-	-	1	-	.00	-
F	Ranunculus testiculatus (a)	-	3	-	-	2	-	.01	-
F	Schoencrambe linifolia	$_a$-	$_b$17	$_a$-	-	8	-	.07	-
F	Sisymbrium altissimum (a)	-	$_b$27	$_a$-	-	13	-	.07	-
F	Sphaeralcea coccinea	$_a$-	$_b$13	$_b$12	-	6	5	.13	.05
F	Streptanthus cordatus	-	3	-	-	1	-	.00	-
F	Tragopogon dubius	$_b$14	$_b$5	$_a$-	6	4	-	.02	-
Total for Annual Forbs		0	247	9	0	104	3	0.90	0.41
Total for Perennial Forbs		91	216	96	42	96	42	3.52	2.07
Total for Forbs		91	463	105	42	200	45	4.42	2.48

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 13B, Study no: 7

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia nova	0	1	-	-
B	Artemisia tridentata wyomingensis	0	1	-	.38
B	Atriplex canescens	1	1	-	.00
B	Chrysothamnus nauseosus	4	7	.98	1.62
B	Ephedra viridis	9	8	1.35	.86
B	Gutierrezia sarothrae	0	11	-	.02
B	Juniperus osteosperma	0	6	2.70	3.67
B	Leptodactylon pungens	4	4	.01	.18
B	Opuntia spp.	2	2	.03	.00
B	Pinus edulis	0	6	4.77	4.36
B	Purshia tridentata	1	1	.15	.30
Total for Browse		21	48	9.99	11.42

CANOPY COVER --
Herd unit 13B, Study no: 7

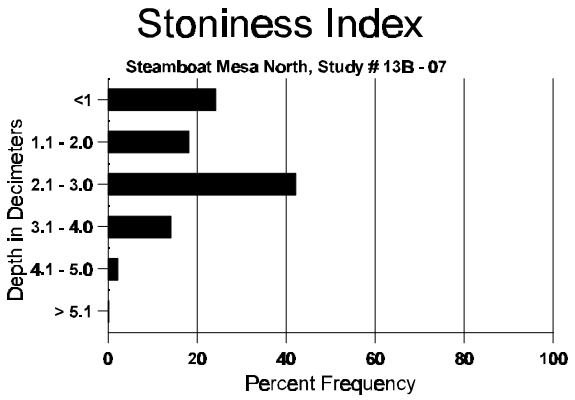
Species	Percent Cover '00
Juniperus osteosperma	5
Pinus edulis	4

BASIC COVER --
Herd unit 13B, Study no: 7

Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'86	'95	'00
Vegetation	325	300	11.25	26.70	33.01
Rock	96	61	.25	4.64	6.08
Pavement	57	120	0	.13	2.52
Litter	383	356	65.00	37.74	47.32
Cryptogams	79	95	.25	.53	2.33
Bare Ground	299	296	23.25	33.34	38.60

SOIL ANALYSIS DATA --
Herd Unit 13B, Study # 7, Study Name: Steamboat Mesa North

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.53	59.0 (12.44)	7.7	56.6	25.1	21.3	1.9	8.7	92.8	0.7



PELLET GROUP FREQUENCY --
Herd unit 13B, Study no: 7

Type	Quadrat Frequency		Pellet Transect	
	'95	'00	Pellet Groups per Acre '00	Days Use per Acre (ha) '00
Rabbit	18	32	513	N/A
Elk	1	-	-	-
Deer	19	9	63	42 (105)
Cattle	6	8	24	17 (43)

BROWSE CHARACTERISTICS --
Herd unit 13B, Study no: 7

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	29	62	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	63	76	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'95	00%	00%	00%
'00	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	0		-
	'00	0		-

Artemisia nova																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	5	13	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'95	00%	00%	00%
'00	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	0		-
	'00	20		-

Artemisia tridentata wyomingensis																		
M	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66	22	19	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	14	0
	00	-	-	1	-	-	-	-	-	-	1	-	-	-	20	9	15	1
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'95	00%	00%	00%
'00	00%	100%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	66	Dec:	-
	'95	0		-
	'00	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Atriplex canescens																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	1	-	-	-	-	-	-	1	-	-	-	20	38	41	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	34	79	0
D	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	-70%
'95	00%	100%	00%	+ 0%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	66	Dec:	100%
	'95	20		0%
	'00	20		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	5	-	-	-	-	-	-	-	-	5	-	-	-	100	27	34	5
	00	4	1	-	-	-	-	-	1	-	6	-	-	-	120	37	45	6
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	+29%
'00	29%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	0%
	'95	100		0%
	'00	140		14%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ephedra viridis																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	7	-	-	2	-	-	-	-	-	9	-	-	-	180			9
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	2	-	-	-	-	-	-	2	-	-	-	133	18	11	2
	95	7	6	2	-	-	-	-	-	-	15	-	-	-	300	17	22	15
	00	-	-	9	4	-	-	-	-	-	13	-	-	-	260	21	29	13
D	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	2	-	-	1	-	-	3	-	-	-	60			3
	00	-	-	3	-	3	-	-	-	-	5	-	-	1	120			6
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	100%	00%	+75%
'95	22%	07%	00%	-26%
'00	15%	60%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	133	Dec:	0%
'95	540		11%
'00	400		30%

Gutierrezia sarothrae																		
S	86	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	7	15	0
	00	23	-	-	-	-	-	-	-	-	23	-	-	-	460	5	10	23
D	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	04%	

Total Plants/Acre (excluding Dead & Seedlings)			
'86	66	Dec:	100%
'95	0		0%
'00	560		11%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	1	-	-	-	-	-	-	-	-	1	-	-	-	66	83	58	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	2	-	-	-	-	-	-	3	-	5	-	-	-	100	-	-	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	66	Dec:	-
	'95	0		-
	'00	120		-

Leptodactylon pungens																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	4	-	-	-	-	-	-	-	-	4	-	-	-	80	5	10	4
	00	6	-	-	-	-	-	-	-	-	6	-	-	-	120	5	10	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	+33%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	80		-
	'00	120		-

Opuntia spp.																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40	5	18	2
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	4	10	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	+ 0%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	60		-
	'00	60		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus edulis																		
Y	86	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	86	2	-	-	-	-	-	-	-	-	2	-	-	-	133	81	47	2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	2	-	-	-	-	-	-	4	-	6	-	-	-	120	-	-	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'95	00%	00%	00%
'00	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	333	Dec:	-
	'95	0		-
	'00	120		-

Purshia tridentata																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	20	40	1
	00	-	-	2	-	-	-	-	-	-	2	-	-	-	40	24	89	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'95	00%	00%	00%
'00	00%	100%	00%

%Change

+50%

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	20		-
	'00	40		-